

**DEVICE FOR DISPENSING A PREDETERMINED VOLUME OF FLOWABLE
FLUID TO BE INGESTED FOR DIGESTION OR ABSORPTION**

REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of provisional application no. 60/302,000, filed July 2, 2001.

TECHNICAL FIELD OF THE INVENTION

The invention generally relates to drinking vessels, and more particularly to a device for dispensing a predetermined volume of flowable fluid to be taken into the body by the mouth for digestion or absorption.

BACKGROUND OF THE INVENTION

Certain illnesses or events, such as dysphasia or stroke can impair a person's swallowing function. An involuntary function that channels fluids down the esophagus instead of the windpipe, the swallowing function is taken for granted. Persons affected by stroke, Parkinson's disease, brain injury, Alzheimer's disease, cerebral palsy, impaired respiratory function, dementia, or dysphasia require constant attention from a caregiver when drinking or taking medication. These patients often choke uncontrollably and spill fluids onto themselves due to their condition. A loss of personal dignity and independence are common as a result.

One method for reducing spillage and choking is to mix additives to fluids to make them more viscous and thus, ease their travel down the esophagus. Obviously, this method is costly, time consuming, and adds to the burdens of the caregiver. Another method is to control the volume of fluid dispensed for ingestion at any one time. With loss of the swallowing function, however, straws and independent control of the intake volume by patients is not possible.

There therefore remains a need for a device for controlling the volume of flowable fluid dispensed to these patients for ingestion. The present invention is directed toward meeting this need.

SUMMARY OF THE INVENTION

The present invention relates to a device for dispensing a predetermined volume of flowable fluid to be taken into the body by the mouth for digestion or absorption. The device includes a vessel having a bottom and a top lip. A delivery tube and a hollow baffle plate are also provided. The baffle plate includes an opening and a reservoir for containing a predetermined volume of flowable fluid. The delivery tube is connected at one end to the reservoir, and the baffle plate is positioned in the bottom of the vessel so that when the vessel is filled with flowable fluid, the reservoir fills by way of the opening. A predetermined volume of fluid is dispensed from the other end of the delivery tube when the vessel is tipped.

In another aspect, the device includes a vessel having a bottom and a top lip. A baffle plate and a delivery tube are also provided. The baffle plate has a top surface, a bottom surface, and an opening, and the baffle plate is positioned in the bottom of the vessel so that the bottom of the vessel and the bottom surface of the plate form a reservoir for containing a predetermined volume of flowable fluid. The delivery tube is connected at one end to the reservoir and extends upwardly above the lip of the vessel. When the vessel is filled with flowable fluid, the reservoir fills by way of the opening so that a predetermined volume of fluid is dispensed from the upper end of the delivery tube when the vessel is tipped.

One object of the present invention is to provide an improved device for dispensing a predetermined volume of flowable fluid to be taken into the body by the mouth for

digestion or absorption. Related objects and advantages of the present invention will be apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side cutaway view showing the interior of the vessel, the baffle plate, and the delivery tube of the invention.

FIG. 2 is a side plan view of the invention of FIG. 1 taken along lines 2—2 of FIG. 1.

FIG. 3 is a top cutaway view of the invention.

FIG. 4 is a side plan view of the baffle plate and delivery tube of the invention.

FIG. 5a shows a patient drinking from the invention in the normal position.

FIG. 5b shows a patient drinking from the invention in the chin tuck position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

For the purposes of promoting an understanding of the principles of the invention and presenting its currently understood best mode of operation, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, with such alterations and further modifications in the illustrated device and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

With reference to figures 1-4, the device for dispensing a predetermined volume of flowable fluid to be taken into the body by the mouth for digestion or absorption 10 includes a vessel 20 with a handle 30, a bottom 40, and a top lip 50. In one embodiment, vessel 10 includes a second handle 32 so that right- and left-handed patients or caregivers can grasp the vessel. In the preferred embodiment, vessel 20 is formed molded from plastic, and handles 30, 32 are integrally formed with the vessel.

The baffle plate 60 has a top surface 62, a bottom surface 64, and an opening 65. A bore 61 is also formed in the baffle plate. In one preferred embodiment, the baffle plate 60 is positioned in the bottom of the vessel 20 so that the bottom of the vessel 40 and the bottom surface of the plate 64 form a reservoir 80 for containing a predetermined volume of flowable fluid. In another preferred embodiment, the baffle plate is hollow so that the interior walls of the baffle plate, as shown in FIG. 4, define the reservoir 80.

Intuitively, the size of the reservoir and hence, the volume of fluid to be dispensed are determined by the particular size of the baffle or how it is designed to fit in the bottom of the vessel 20. It should be understood that these tolerances are to be designed by knowledgeable and skilled artisans when medicines are being delivered from device 10. In the preferred embodiment, reservoir 80 is able to contain between about one and eight milliliters (mL) of fluid. In a more preferred embodiment, reservoir 80 is able to contain between about twelve and twenty-five milliliters (mL) of fluid. In the most preferred embodiment, reservoir 80 is able to contain between about eight and twelve milliliters (mL) of fluid.

Delivery tube 70 is connected at one end 71 to the reservoir and extends upwardly above the lip 50 of the vessel so that upon filling the vessel 20 with flowable fluid, the reservoir 80 fills with fluid by way of the opening 65. Hence, a predetermined volume of fluid is dispensed from the upper end 72 of the delivery tube when the vessel is tipped. In one preferred embodiment, the delivery is connected to the reservoir 80 via bore 61. In the most preferred embodiment, the delivery tube 70 and baffle plate 60 are integrally formed from plastic.

The vessel includes a lid 100 having a bore 101 for receiving the delivery tube, an air port 105, and a connection port 110 for receiving a mouthpiece 120. In the preferred embodiment, mouthpiece is enlarged slightly at its end to accommodate the patient. Additionally, in a preferred embodiment, the mouthpiece 120 is bent so that the device 10 is equally effective at delivering the predetermined volume of fluid from the reservoir 80

to patients locked in the chin tuck position, as shown in FIG. 5d. Figure 5c shows use of the device in the normal position.

The fluid "flows" from the reservoir 80 to the mouth for ingestion via the delivery tube 70. The flow of fluid stops when the reservoir is emptied. Since the baffle plate 60 blocks the free flow of fluid from the vessel 20 and contains a pre-measured volume the patient with an impaired swallowing function does not choke and spill fluid onto himself.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered illustrative and not restrictive in character. It is understood that the embodiments have been shown and described in the foregoing specification in satisfaction of the best mode and enablement requirements. It is understood that one of ordinary skill in the art could readily make a nearly infinite number of insubstantial changes and modifications to the above-described embodiments and that it would be impractical to attempt to describe all such embodiment variations in the present specification. Accordingly, it is understood that all changes and modifications that come within the spirit of the invention are desired to be protected.